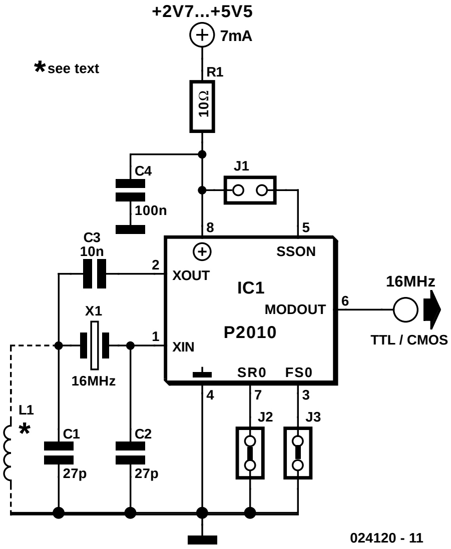
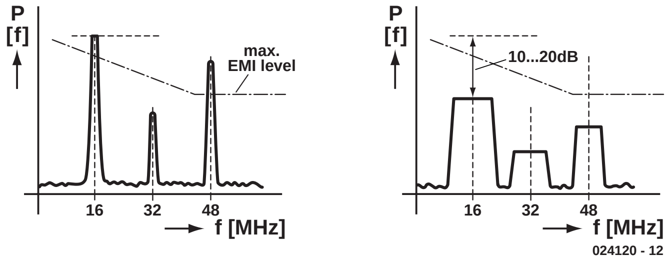
EMC Improver





FS0	SR0	Frequency range	Spreading range
1	0	10 to 20 MHz	± 1.50 %
1	1	10 to 20 MHz	± 2.50 %
0	0	20 to 35 MHz	± 1.25 %
0	1	20 to 35 MHz	± 2.00 %

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All electronic equipment these days must conform to the requirements of the electromagnetic compliance (EMC) regulations. A particular problem is the radiation of interference, for example the clock signal, from digital circuits. The problem is conventionally attacked using shielding and complex smoothing circuits.

A simpler and cheaper approach is offered by the company PulseCore in the form of a crystal oscillator IC. It distributes the energy in the interference signal over a band of frequencies, rather than concentrating it at one frequency. The energy at any one particular frequency is therefore reduced. In practice reductions in interference of 10 dB to 20 dB can be achieved. The technique used is known as ‘Spread Spectrum’. The P2010 device includes a crystal oscillator, suitable for frequencies between 10 MHz and 35 MHz, and the spread spectrum jitter circuit. ICs designed to work at higher frequencies are also available. Crystal X1 is designed for fundamental frequency oscillation; for overtone crystals coil L1 ensures that the crystal oscillates at the correct (third or fifth) harmonic. The frequency range is selected using pin FS0, while SR0 allows one of two different spreading ranges to be selected (see table). In the table a ‘0’ indicates that Br 2 (respectively Br 3) bridged while a ‘1’ indicates that Br 2 (respectively Br 3) is open.

The device draws a current of about 7 mA and operates with 3.3 V and 5 V logic. Br 1 allows the clock jittering to be disabled for test purposes.

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